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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/825,097

04/16/2004

Hiroatsu Toi

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EXAMINER

YOUNG, NATASHA E

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/825,097

**Applicant(s)**

TOI ET AL.

**Examiner**

NATASHA YOUNG

**Art Unit**

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 May 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/S509)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claim 1 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 7 of copending Application No. 10/714891 in view of Nakamura (JP 07-218397 A).

Regarding claim 1, the copending application to Osawa et al claims in claims 1 and 7 a dispensing tip container having a plurality of holding portions for holding dispensing tips; a dispensing head having attachment portions to which at least one dispensing tip is attached, wherein when one or more dispensing tips are attached to the attachment portions, the dispensing head is capable of performing sucking and expelling operations for sucking liquid in or expelling the liquid out from the one or more dispensing tips; a moving mechanism that moves the dispensing head.

Osawa et al does not include a sensor in the claims that senses if one or more dispensing tips are attached to the attachment portions of the dispensing head when the head moves relative to the sensor, wherein the sensor has a sensing region that extends in a direction slanted with respect to a direction in which the dispensing head moves, and generates an output indicative of a status of the dispensing tips attached to the attachment portions of the dispensing head; and a control device that controls the sucking and expelling operations performed by the dispensing head and controls the moving mechanism to control movements of the dispensing head.

Nakamura discloses an automatically dispensing apparatus having a piston cylinder (9) that drives a piston with the first motor and sucks or discharges liquid through the pipe of a tip part, a driving-shaft system (8) holds the piston cylinder (9) and move the piston cylinder (9) in the directions of the X, Y, and Z axes, and a control means which processes the image data picked up with the image pick up means and controls the piston cylinder (9) and the driving-shaft system (8) (see Abstract) such that it is possible to move the dispensing head relative to the sensor such that the sensor has a sensing region that extends in a direction slanted with respect to a direction in which the dispensing head moves and a control device that controls the sucking and expelling operations performed by the dispensing head and controls the moving mechanism to control movements of the dispensing head.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify claims 1 and 7 of Osawa et al with the teachings of Nakamura for the predictable results of improved control and more flexibility of movement of the dispensing head.

This is a provisional obviousness-type double patenting rejection.

Claim 1 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 10 of copending Application No. 10/714889 in view of Nakamura (JP 07-218397).

Regarding claim 1, the copending application to Toi et al claims in claims 1 and 10 a dispensing tip container having a plurality of holding portions for holding dispensing tips; a dispensing head having attachment portions to which at least one dispensing tip

is attached, wherein when one or more dispensing tips are attached to the attachment portions, the dispensing head is capable of performing sucking and expelling operations for sucking liquid in or expelling the liquid out from the one or more dispensing tips; a moving mechanism that moves the dispensing head.

Toi et al does not include a sensor in the claims that senses if one or more dispensing tips are attached to the attachment portions of the dispensing head when the head moves relative to the sensor, wherein the sensor has a sensing region that extends in a direction slanted with respect to a direction in which the dispensing head moves, and generates an output indicative of a status of the dispensing tips attached to the attachment portions of the dispensing head; and a control device that controls the sucking and expelling operations performed by the dispensing head and controls the moving mechanism to control movements of the dispensing head.

Nakamura discloses an automatically dispensing apparatus having a piston cylinder (9) that drives a piston with the first motor and sucks or discharges liquid through the pipe of a tip part, a driving-shaft system (8) holds the piston cylinder (9) and move the piston cylinder (9) in the directions of the X, Y, and Z axes, and a control means which processes the image data picked up wit the image pick up means and controls the piston cylinder (9) and the driving-shaft system (8) (see Abstract) such that it is possible to move the dispensing head relative to the sensor such that the sensor has a sensing region that extends in a direction slanted with respect to a direction in which the dispensing head moves and a control device that controls the sucking and

expelling operations performed by the dispensing head and controls the moving mechanism to control movements of the dispensing head.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify claims 1 and 10 of Toi et al with the teachings of Nakamura for the predictable results of improved control and more flexibility of movement of the dispensing head.

This is a provisional obviousness-type double patenting rejection.

Claims 1, 3, and 9 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 5 of copending Application No. 11/116299 in view of Nakamura (JP 07-218397).

Regarding claim 1, the copending application to Toi et al claims in claims 1 and 5 a dispensing tip container having a plurality of holding portions for holding dispensing tips; a dispensing head having attachment portions to which at least one dispensing tip is attached, wherein when one or more dispensing tips are attached to the attachment portions, the dispensing head is capable of performing sucking and expelling operations for sucking liquid in or expelling the liquid out from the one or more dispensing tips; a moving mechanism that moves the dispensing head; a sensor, and generates an output indicative of a status of the dispensing tips attached to the attachment portions of the dispensing head; and a control device that controls the sucking and expelling operations performed by the dispensing head and controls the moving mechanism to control movements of the dispensing head.

Toi et al does not include a sensor in the claims that senses if one or more dispensing tips are attached to the attachment portions of the dispensing head when the head moves relative to the sensor, wherein the sensor has a sensing region that extends in a direction slanted with respect to a direction in which the dispensing head moves.

Nakamura discloses an automatically dispensing apparatus having a piston cylinder (9) that drives a piston with the first motor and sucks or discharges liquid through the pipe of a tip part, a driving-shaft system (8) holds the piston cylinder (9) and move the piston cylinder (9) in the directions of the X, Y, and Z axes, and a control means which processes the image data picked up with the image pick up means and controls the piston cylinder (9) and the driving-shaft system (8) (see Abstract) such that it is possible to move the dispensing head relative to the sensor such that the sensor has a sensing region that extends in a direction slanted with respect to a direction in which the dispensing head moves.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify claims 1 and 5 of Toi et al with the teachings of Nakamura for the predictable results of improved control and more flexibility of movement of the dispensing head.

Regarding claim 3, Toi et al does not include in the claim an automatic liquid handling system wherein the sensor comprises a light emitting unit and a light receiving unit disposed apart a predetermined distance from the light emitting unit, a light path



being formed between the light emitting unit and the light receiving unit, wherein the moving mechanism moves the dispensing head to traverse the light path.

Nakamura discloses an automatic liquid handling system (see Abstract) wherein the sensor comprises a light emitting unit (13) and a light receiving unit (7) disposed apart a predetermined distance from the light emitting unit, a light path being formed between the light emitting unit and the light receiving unit, wherein the moving mechanism moves the dispensing head to traverse the light path (see Abstract and paragraph 0013).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify claims 1 and 5 of Toi et al with the teachings of Nakamura for the predictable results of improved control and more flexibility of movement of the dispensing head.

Regarding claim 9, Toi et al claim an automatic liquid handling system wherein the moving mechanism moves the dispensing head in a three dimensional space defined by X-axis, Y-axis, and Z-axis, and swivels the dispensing head in a plane defined by the X-axis and the Y-axis.

Toi et al does not include in the claim an automatic liquid handling system wherein the light emitting unit and the light receiving unit are disposed in the plane defined by the X-axis and the Y-axis in such a positional relationship that the light path forms 45 degrees with respect to the X-axis and the Y-axis, and the moving mechanism moves the dispensing head in a direction of the X-axis or the Y-axis to traverse the light path.

Nakamura et al discloses an automatic liquid handling system wherein the light emitting unit and the light receiving unit are disposed in the plane defined by the X-axis and the Y-axis in such a positional relationship that the light path forms 30 degrees with respect to the X-axis and the Y-axis, and the moving mechanism moves the dispensing head in a direction of the X-axis or the Y-axis to traverse the light path (see Abstract; paragraph 0013; and figure 2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have an automatic liquid handling system wherein the light emitting unit and the light receiving unit are disposed in the plane defined by the X-axis and the Y-axis in such a positional relationship that the light path forms 45 degrees with respect to the X-axis and the Y-axis, since it has been held that rearranging parts of an invention involves only routine skill in the art (see MPEP 2144.04 (VI-C)).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the claims of Toi et al with the teachings of Nakamura for the predictable results of improved control and more flexibility of movement of the dispensing head.

This is a provisional obviousness-type double patenting rejection.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-4 and 9-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paschetto et al (US 2002/0108857 A1) in view of Nakamura (JP 07-218397 A).

Regarding claim 1, Paschetto et al discloses an automatic liquid handling system comprising: a dispensing tip container (203) having a plurality of holding portions (204A) for holding dispensing tips (204C); a dispensing head (20A) having attachment portions (204) to which at least one dispensing tip is attached, wherein when one or more dispensing tips are attached to the attachment portions, the dispensing head is capable

of performing sucking and expelling operations (204B) for sucking liquid in or expelling the liquid out from the one or more dispensing tips; a moving mechanism that moves the dispensing head (18, 19); a sensor that senses if one or more dispensing tips are attached to the attachment portions of the dispensing head when the head moves relative to the sensor, and generates an output indicative of a status of the dispensing tips attached to the attachment portions of the dispensing head (the tips are removed from the tip holders in any suitable way on the liquid handling tool that pushes the off the tip holders) (see paragraph 0040); and a control device that controls the sucking and expelling operations performed by the dispensing head (see paragraphs 0037-0038)) and controls the moving mechanism to control movements of the dispensing head (18, 19) (see paragraph 0035-0042 and figures 2-5).

Paschetto et al does not disclose that the sensor has a sensing region that extends in a direction slanted with respect to a direction in which the dispensing head moves.

Nakamura discloses an automatically dispensing apparatus having a piston cylinder (9) that drives a piston with the first motor and sucks or discharges liquid through the pipe of a tip part, a driving-shaft system (8) holds the piston cylinder (9) and moves the piston cylinder (9) in the directions of the X, Y, and Z axes, and a control means which processes the image data picked up with the image pick up means and controls the piston cylinder (9) and the driving-shaft system (8) (see Abstract) such that it is possible to move the dispensing head relative to the sensor such that the sensor has a sensing region that extends in a direction slanted with respect to a direction in

which the dispensing head moves and a control device that controls the sucking and expelling operations performed by the dispensing head and controls the moving mechanism to control movements of the dispensing head.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Paschetto et al with the teachings of Nakamura for the predictable results of improved control and more flexibility of movement of the dispensing head.

Claim 2 depends on claim 1 such that the reasoning used to reject claim 1 will be used to reject the dependent portions of the claim.

Regarding claim 2, Paschetto et al discloses an automatic liquid handling system wherein the sensor optically senses one or more dispensing tips (see paragraph 0040).

Claim 3 depends on claim 2 such that the reasoning used to reject claim 2 will be used to reject the dependent portions of the claim.

Regarding claim 3, Paschetto et al discloses the use of a photosensor which sense one or more dispensing tips (see paragraph 0040).

Paschetto et al does not disclose an automatic liquid handling system wherein the sensor comprises a light emitting unit and a light receiving unit disposed apart a predetermined distance from the light emitting unit, a light path being formed between the light emitting unit and the light receiving unit, wherein the moving mechanism moves the dispensing head to traverse the light path.

Nakamura discloses an automatic liquid handling system (see Abstract) wherein the sensor comprises a light emitting unit (13) and a light receiving unit (7) disposed

apart a predetermined distance from the light emitting unit, a light path being formed between the light emitting unit and the light receiving unit, wherein the moving mechanism moves the dispensing head to traverse the light path (see Abstract and paragraph 0013).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Paschetto et al with the teachings of Nakamura for the predictable results of improved control and more flexibility of movement of the dispensing head.

Claim 4 depends on claim 1 such that the reasoning used to reject claim 1 will be used to reject the dependent portions of the claim.

Regarding claim 4, Paschetto et al discloses the use of a controller (see figure 7).

Paschetto et al does not disclose an automatic liquid handling system further comprising a memory that stores information about a number of dispensing tips to be attached to the attachment portions of the dispensing head with position data indicating the holding portions to which the dispensing tips are to be attached, wherein the control device compares the output of the sensor with the information stored in the memory.

Nakamura discloses a control means processes the image data picked up with the image pickup means and controls the piston cylinder (9) and the driving-shaft system (8) (see Abstract) and a memory (see paragraph 0014).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Paschetto et al with the teachings of

Nakamura for the predictable results of improved control and more flexibility of movement of the dispensing head.

Claim 9 depends on claim 3 such that the reasoning used to reject claim 3 will be used to reject the dependent portions of the claim.

Regarding claim 9, Paschetto et al discloses movement of the dispensing head in the x and y directions (see figure 2).

Paschetto et al does not disclose an automatic liquid handling system wherein the moving mechanism moves the dispensing head in a three dimensional space defined by X-axis, Y-axis, and Z-axis, and swivels the dispensing head in a plane defined by the X-axis and the Y-axis, wherein the light emitting unit and the light receiving unit are disposed in the plane defined by the X-axis and the Y-axis in such a positional relationship that the light path forms 45 degrees with respect to the X-axis and the Y-axis, and the moving mechanism moves the dispensing head in a direction of the X-axis or the Y-axis to traverse the light path.

Nakamura discloses an automatically dispensing apparatus having a piston cylinder (9) that drives a piston with the first motor and sucks or discharges liquid through the pipe of a tip part, a driving-shaft system (8) holds the piston cylinder (9) and move the piston cylinder (9) in the directions of the X, Y, and Z axes, and a control means which processes the image data picked up with the image pick up means and controls the piston cylinder (9) and the driving-shaft system (8) (see Abstract) such that it is possible to move the dispensing head relative to the sensor such that the sensor has a sensing region that extends in a direction slanted with respect to a direction in

which the dispensing head moves and a control device that controls the sucking and expelling operations performed by the dispensing head and controls the moving mechanism to control movements of the dispensing head.

Nakamura et al discloses an automatic liquid handling system wherein the light emitting unit and the light receiving unit are disposed in the plane defined by the X-axis and the Y-axis in such a positional relationship that the light path forms 30 degrees with respect to the X-axis and the Y-axis, and the moving mechanism moves the dispensing head in a direction of the X-axis or the Y-axis to traverse the light path (see Abstract; paragraph 0013; and figure 2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have an automatic liquid handling system wherein the light emitting unit and the light receiving unit are disposed in the plane defined by the X-axis and the Y-axis in such a positional relationship that the light path forms 45 degrees with respect to the X-axis and the Y-axis, since it has been held that rearranging parts of an invention involves only routine skill in the art (see MPEP 2144.04 (VI-C)).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the claims of Paschetto et al with the teachings of Nakamura for the predictable results of improved control and more flexibility of movement of the dispensing head.

Claim 10 depends on claim 1 such that the reasoning used to reject claim 1 will be used to reject the dependent portions of the claim.



Regarding claim 10, Paschetto et al does not disclose an automatic liquid handling system wherein the sensing region of the sensor included a sensing axis that extends in the direction slanted with respect to the direction in which the dispensing head moves.

Nakamura discloses an automatic liquid handling system wherein the sensing region of the sensor included a sensing axis that extends in the direction slanted with respect to the direction in which the dispensing head moves (see paragraphs 0013-0014 and figure 2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the claims of Paschetto et al with the teachings of Nakamura for the predictable results of improved control and more flexibility of movement of the dispensing head.

Claim 11 depends on claim 10 such that the reasoning used to reject claim 10 will be used to reject the dependent portions of the claim.

Regarding claim 11, Paschetto et al does not disclose an automatic liquid handling system wherein the sensor is an optical sensor and the sensing axis is an optical sensing axis.

Nakamura discloses an automatic liquid handling system wherein the sensor is an optical sensor and the sensing axis is an optical sensing axis (see paragraphs 0013-0014 and figure 2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the claims of Paschetto et al with the teachings of

Nakamura for the predictable results of improved control and more flexibility of movement of the dispensing head.

Claim 12 depends on claim 11 such that the reasoning used to reject claim 11 will be used to reject the dependent portions of the claim.

Regarding claim 12, Paschetto et al does not disclose an automatic liquid handling system wherein the sensor comprises a light emitting unit and a light receiving unit disposed apart a predetermined distance from the light emitting unit, and a light path extending along the optical axis being formed between the light emitting unit and the light receiving unit, wherein the moving mechanism moves the dispensing head to traverse the optical axis of the light path in the slanted direction with respect to the direction in which the dispensing head moves.

Nakamura discloses an automatic liquid handling system wherein the sensor comprises a light emitting unit and a light receiving unit disposed apart a predetermined distance from the light emitting unit, and a light path extending along the optical axis being formed between the light emitting unit and the light receiving unit, wherein the moving mechanism moves the dispensing head to traverse the optical axis of the light path in the slanted direction with respect to the direction in which the dispensing head moves (see Abstract; paragraphs 0013-0014; and figure 2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the claims of Paschetto et al with the teachings of Nakamura for the predictable results of improved control and more flexibility of movement of the dispensing head.

Claim 13 depends on claim 3 such that the reasoning used to reject claim 3 will be used to reject the dependent portions of the claim.

Regarding claim 13, Paschetto et al does not disclose an automatic liquid handling system wherein the slanted direction of the optical axis of the light path extends at about 45 degree angle with respect to the direction in which the dispensing head moves.

Nakamura et al discloses an automatic liquid handling system wherein the light emitting unit and the light receiving unit are disposed in the plane defined by the X-axis and the Y-axis in such a positional relationship that the light path forms 30 degrees with respect to the X-axis and the Y-axis, and the moving mechanism moves the dispensing head in a direction of the X-axis or the Y-axis to traverse the light path (see Abstract; paragraph 0013; and figure 2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have an automatic liquid handling system wherein the light emitting unit and the light receiving unit are disposed in the plane defined by the X-axis and the Y-axis in such a positional relationship that the light path forms 45 degrees with respect to the X-axis and the Y-axis, since it has been held that rearranging parts of an invention involves only routine skill in the art (see MPEP 2144.04 (VI-C)).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the claims of Paschetto et al with the teachings of Nakamura for the predictable results of improved control and more flexibility of movement of the dispensing head.

Claim 14 depends on claim 13 such that the reasoning used to reject claim 13 will be used to reject the dependent portions of the claim.

Regarding claim 14, Paschetto et al does not disclose an automatic liquid handling system wherein the moving mechanism moves the dispensing head in a three dimensional space defined by X-axis, Y-axis, and Z-axis, wherein the light emitting unit and the light receiving unit are disposed in the plane defined by the X-axis and the Y-axis in such a positional relationship that the optical axis of the light path forms the slanted direction of about the 45 degree angle with respect to the movement of the dispensing head in the direction of the X-axis or the Y-axis.

Nakamura discloses an automatically dispensing apparatus having a piston cylinder (9) that drives a piston with the first motor and sucks or discharges liquid through the pipe of a tip part, a driving-shaft system (8) holds the piston cylinder (9) and move the piston cylinder (9) in the directions of the X, Y, and Z axes, and a control means which processes the image data picked up with the image pick up means and controls the piston cylinder (9) and the driving-shaft system (8) (see Abstract) such that it is possible to move the dispensing head relative to the sensor such that the sensor has a sensing region that extends in a direction slanted with respect to a direction in which the dispensing head moves and a control device that controls the sucking and expelling operations performed by the dispensing head and controls the moving mechanism to control movements of the dispensing head.

Nakamura et al discloses an automatic liquid handling system wherein the light emitting unit and the light receiving unit are disposed in the plane defined by the X-axis

and the Y-axis in such a positional relationship that the light path forms 30 degrees with respect to the X-axis and the Y-axis, and the moving mechanism moves the dispensing head in a direction of the X-axis or the Y-axis to traverse the light path (see Abstract; paragraph 0013; and figure 2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have an automatic liquid handling system wherein the light emitting unit and the light receiving unit are disposed in the plane defined by the X-axis and the Y-axis in such a positional relationship that the light path forms 45 degrees with respect to the X-axis and the Y-axis, since it has been held that rearranging parts of an invention involves only routine skill in the art (see MPEP 2144.04 (VI-C)).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the claims of Paschetto et al with the teachings of Nakamura for the predictable results of improved control and more flexibility of movement of the dispensing head.

Regarding claim 15, Paschetto et al discloses an automatic liquid handling system comprising: a dispensing tip container (203) having a plurality of holding portions (204A) for holding dispensing tips (204C); a dispensing head (20A) having attachment portions (204) to which at least one dispensing tip is attached, wherein when one or more dispensing tips are attached to the attachment portions, the dispensing head is capable of performing sucking and expelling operations (204B) for sucking liquid in or expelling the liquid out from the one or more dispensing tips; a moving mechanism that moves the dispensing head (18, 19); a sensor that senses if

one or more dispensing tips are attached to the attachment portions of the dispensing head when the head moves relative to the sensor, and generates an output indicative of a status of the dispensing tips attached to the attachment portions of the dispensing head (the tips are removed from the tip holders in any suitable way on the liquid handling tool that pushes the off the tip holders) (see paragraph 0040); and a control device that controls the sucking and expelling operations performed by the dispensing head (see paragraphs 0037-0038)) and controls the moving mechanism to control movements of the dispensing head (18, 19) (see paragraph 0035-0042 and figures 2-5).

Paschetto et al does not disclose that the sensor has a sensing region that extends in a direction slanted with respect to a direction in which the dispensing head moves and a sensor that senses if one or more dispensing tips are attached to the attachment portions of the dispensing head when the head moves relative to the sensor, wherein the sensor comprises a light emitting unit and a light receiving unit disposed apart a predetermined distance from the light emitting unit, a light path being formed between the light emitting unit and the light receiving unit, wherein the moving mechanism moves the dispensing head to traverse the light path.

Nakamura discloses an automatically dispensing apparatus having a piston cylinder (9) that drives a piston with the first motor and sucks or discharges liquid through the pipe of a tip part, a driving-shaft system (8) holds the piston cylinder (9) and move the piston cylinder (9) in the directions of the X, Y, and Z axes, and a control means which processes the image data picked up with the image pick up means and controls the piston cylinder (9) and the driving-shaft system (8) (see Abstract) such that

it is possible to move the dispensing head relative to the sensor such that the sensor has a sensing region that extends in a direction slanted with respect to a direction in which the dispensing head moves and a control device that controls the sucking and expelling operations performed by the dispensing head and controls the moving mechanism to control movements of the dispensing head.

Nakamura et al discloses an automatic liquid handling system wherein the light emitting unit and the light receiving unit are disposed in the plane defined by the X-axis and the Y-axis in such a positional relationship that the light path forms 30 degrees with respect to the X-axis and the Y-axis, and the moving mechanism moves the dispensing head in a direction of the X-axis or the Y-axis to traverse the light path (see Abstract; paragraph 0013; and figure 2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Paschetto et al with the teachings of Nakamura such that an automatic liquid handling system has a sensor has a sensing region that extends in a direction slanted with respect to a direction in which the dispensing head moves and a sensor that senses if one or more dispensing tips are attached to the attachment portions of the dispensing head when the head moves relative to the sensor, wherein the sensor comprises a light emitting unit and a light receiving unit disposed apart a predetermined distance from the light emitting unit, a light path being formed between the light emitting unit and the light receiving unit, wherein the moving mechanism moves the dispensing head to traverse the light path for

the predictable results of improved control and more flexibility of movement of the dispensing head.

Claims 5-8 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paschetto et al (US 2002/0108857 A1) and Nakamura (JP 07-218397 A) as applied to claim 3 above, and further in view of Tajima et al (US 2003/0075556 A1).

Claims 5-6 depend on claim 4 such that the reasoning used to reject claim 4 will be used to reject the dependent portions of the claim.

Regarding claim 5, Paschetto et al does not disclose an automatic liquid handling system further comprising adjusting means for adjusting the number of dispensing tips attached to the attachment portions of the dispensing head and the attachment positions of the dispensing tips as indicated by the information stored in the memory when the control device generates a comparison result indicating that the output of the sensor and the information stored in the memory are not in coincidence with each other.

Tajima et al does not disclose an automatic liquid handling system further comprising adjusting means for adjusting the number of dispensing tips attached to the attachment portions of the dispensing head and the attachment positions of the dispensing tips as indicated by the information stored in the memory when the control device generates a comparison result indicating that the output of the sensor and the information stored in the memory are not in coincidence with each other.

However, Tajima et al discloses that the detaching unit (24) comprises a sensor (47) to verify the detachment of the pipette tips and that the detaching unit (24) is judged based on the optical condition detected by the detecting device (2) (see



paragraphs 0133-0137). If the invention can detect if a tip is detached, it is an obvious variation to detect if the tip is attached.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Paschetto et al with the teachings of Tajima et al to provide a dispenser operation verification apparatus and a verification method that performs verification of the dispenser operation with high reliability regarding whole processes consisting of a series of operations, by performing the operations while verifying the operations of the dispenser (see Tajima et al paragraph 0012).

Regarding claim 6, Paschetto et al does not disclose an automatic liquid handling system wherein when the control device generates a comparison result indicating that the output of the sensor and the information stored in the memory are not in coincidence with each other, the control device controls the moving mechanism to stop movement of the dispensing head.

Tajima et al discloses an automatic liquid handling system that in the case where the tip (18) is not attached or attached the optical information obtained from the detecting device is compared to the operation instruction and instructs the display selection (14) to display affirmative or negative and that in a situation where there is a shortage of liquid drawn into the pipette tip a warning is displayed in the display selection and others means of warning may be used like an alarm sound, voice or the like and also to send a signal to the operation instruction device (15) (see paragraphs 0137, 0153-0154 and 0158).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Tajima et al such that a signal is sent to the operation instruction device to stop the movement of the dispensing device when the judgment device determines that the tip is not attached to the pipette because the liquid handling system would not operate correctly in that situation.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Paschetto et al with the teachings of Tajima et al to provide a dispenser operation verification apparatus and a verification method that performs verification of the dispenser operation with high reliability regarding whole processes consisting of a series of operations, by performing the operations while verifying the operations of the dispenser (see Tajima et al paragraph 0012).

Claims 7-8 depend on claim 6 such that the reasoning used to reject claim 6 will be used to reject the dependent portions of the claim.

Regarding claim 7, Paschetto et al does not disclose an automatic liquid handling system wherein the control device generates the comparison result each time comparison is performed with respect to one attachment portion of the dispensing head.

Tajima et al does not explicitly disclose an automatic liquid handling system wherein the control device generates the comparison result each time comparison is performed with respect to one attachment portion of the dispensing head.

Tajima disclose a judgment device (19) that generates comparison results to the optical pattern of the detecting device (20) and the operation instruction or inputted

information such as device information related to the dispenser (see paragraph 0118-0119), which may include one attachment portion of the dispensing head.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Paschetto et al with the teachings of Tajima et al to provide a dispenser operation verification apparatus and a verification method that performs verification of the dispenser operation with high reliability regarding whole processes consisting of a series of operations, by performing the operations while verifying the operations of the dispenser (see Tajima et al paragraph 0012).

Regarding claim 8, Paschetto et al does not disclose an automatic liquid handling system wherein the control device generates the comparison result after comparison is performed with respect to all the attachment portions of the dispensing head.

Tajima et al does not explicitly disclose an automatic liquid handling system wherein the control device generates the comparison result each time comparison is performed with respect to all the attachment portions of the dispensing head.

Tajima disclose a judgment device (19) that generates comparison results to the optical pattern of the detecting device (20) and the operation instruction or inputted information such as device information related to the dispenser (see paragraphs 0018-0119), which may include all the attachment portions of the dispensing head.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Paschetto et al with the teachings of Tajima et al to provide a dispenser operation verification apparatus and a verification

method that performs verification of the dispenser operation with high reliability regarding whole processes consisting of a series of operations, by performing the operations while verifying the operations of the dispenser (see Tajima et al paragraph 0012).

Claim 16 depends on claim 15 such that the reasoning used to reject claim 15 will be used to reject the dependent portions of the claims.

Paschetto et al discloses an automatic liquid handling system which detects the presence or absence of the attachment portion (pipette tip) of the dispensing head (see paragraphs 0010 and 0004-0041).

Paschetto et al does not disclose an automatic liquid handling system wherein the control device performs a comparison based upon an output of the sensor and predetermined information and generates a comparison result each time comparison is performed with respect to one attachment portion of the dispensing head.

Tajima et al does not explicitly disclose an automatic liquid handling system wherein the control device performs a comparison based upon an output of the sensor and predetermined information and generates a comparison result each time comparison is performed with respect to one attachment portion of the dispensing head.

Tajima disclose a judgment device (19) that generates comparison results to the optical pattern of the detecting device (20) and the operation instruction or inputted information such as device information related to the dispenser (see paragraphs 0018-0119), which may include all the attachment portions of the dispensing head.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Paschetto et al with the teachings of Tajima et al to provide a dispenser operation verification apparatus and a verification method that performs verification of the dispenser operation with high reliability regarding whole processes consisting of a series of operations, by performing the operations while verifying the operations of the dispenser (see Tajima et al paragraph 0012).

Claim 17 depends on claim 16 such that the reasoning used to reject claim 16 will be used to reject the dependent portions of the claims.

Paschetto et al does not disclose an automatic liquid handling system wherein the comparison results indicating abnormality are displayed after comparison is performed with respect to all of the attachment portions of the dispensing head.

Tajima et al does not explicitly disclose an automatic liquid handling system wherein the comparison results indicating abnormality are displayed after comparison is performed with respect to all of the attachment portions of the dispensing head.

Tajima disclose a judgment device (19) that generates comparison results to the optical pattern of the detecting device (20) and the operation instruction or inputted information such as device information related to the dispenser (see paragraphs 0018-0119), which may include all the attachment portions of the dispensing head.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Paschetto et al with the teachings of Tajima et al to provide a dispenser operation verification apparatus and a verification

method that performs verification of the dispenser operation with high reliability regarding whole processes consisting of a series of operations, by performing the operations while verifying the operations of the dispenser (see Tajima et al paragraph 0012).

### ***Response to Arguments***

Applicant's arguments, see Remarks, filed May 1, 2008, with respect to the rejection(s) of claim(s) 1-9 under U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Nakamura (JP 07-218397).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NATASHA YOUNG whose telephone number is (571)270-3163. The examiner can normally be reached on Mon-Thurs 7:30am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NY

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